

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.); the "CWA", and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

City of Brockton

is authorized to discharge from a facility located at

Brockton Advanced Water Reclamation Facility
303 Oak Hill Way
Brockton, Massachusetts 02401

to receiving water named

Salisbury Plain River

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

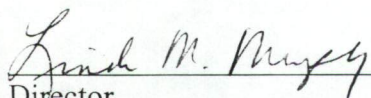
This permit shall become effective 30 days after the date of signature .

This permit and the authorization to discharge expire at midnight, September 30, 2003.

This permit supersedes the permit issued on September 26, 1994.

This permit consists of 14 pages in Part I including effluent limitations, monitoring requirements, etc., and 35 pages in Part II including General Conditions and Definitions.

Signed this ³⁰ day of *September*, 1999



Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA



Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- I. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated sanitary and industrial wastewater from outfall serial number 001. Such discharges shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Discharge Limitations						Monitoring Requirement	
	(lbs/day)			(mg/l unless otherwise noted)			Measurement Frequency	Sample Type
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily		
Flow, MGD	---	---	---	Report	---	Report	Continuous	See footnote 1
BOD	Report	Report	Report	Report	Report	Report	Daily ³	24-hr comp
CBOD (May 1-Oct 31)	750	1200	2250	5	8	15	Daily ³	24-hr comp
(Nov 1 - Apr 30)	2250	3750	4500	15	25	30	Daily ³	24-hr comp ²
TSS (May 1 - Oct 31)	750	1200	2250	5	8	15	Daily ³	24-hr comp
(Nov 1 - Apr 30)	2250	3750	4500	15	25	30	Daily ³	24-hr comp
pH, S. U.	See I. A. 1. b.						Daily	Grab
Fecal Coliform ⁴ , cfus/100 ml (April 1 - Oct 31)	---	---	---	200		400	3/Week	Grab
Total Residual Chlorine ^{4,5}	---	---	---	0.011	---	0.019	3/Day	Grab
NH ₃ -N, (June 1 - Oct 31)	150	150	225	1.0	1.0	1.5	2/Week	24-hr comp
(Nov 1 - Nov 30)	---	---	---	6.3	---	Report	2/Week	24-hr comp
(Dec 1 - Apr 30)	---	---	---	9.5	---	Report	2/Week	24-hr comp
(May 1 - May 31)	---	---	---	3.2	---	Report	2/Week	24-hr comp
TKN	Report	---	Report	Report	---	Report	1/Month	24-hr comp
NO ₂ /NO ₃ ,	Report	---	Report	Report	---	Report	1/Month	24-hr comp

Part I.A.1.

Effluent Characteristic	Discharge Limitations						Monitoring Requirement	
	lbs/day			(mg/l unless otherwise noted))			Measurement Frequency	Sample Type
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily		
Phosphorus, Total, mg/l (May 1 - Oct 31)	150	150	225	1.0	1.0	1.5	2/Week	24-hr comp
Copper, Total, µg/l	---	---	---	5.3	---	7.4	1/Month	24-hr comp
Dissolved Oxygen	---Maintain a minimum of 6.0 mg/l ---						Daily	Grab
<u>Whole Effluent, Toxicity Testing</u>								
LC ₅₀ ^{6,9}	---	---	---	100%			6/Year ⁷	24-hr comp
C-NOEC, % ^{8,9}	---	---	---	98% or greater			6/year ⁷	24-hr comp

- a. The discharge shall not cause a violation of the water quality standards of the receiving waters.
- b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.
- f. When the effluent discharged for a period of 90 consecutive days exceeds 80 percent of the design flow, the permittee shall submit to the permitting authorities a projection of loadings up to the time when the design capacity of the treatment facility will be reached, and a program for maintaining satisfactory treatment levels consistent with approved water quality management plans.

Footnotes:

1. For flow, report maximum and minimum daily rates and total flow for each operating date.
2. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during one working day.
3. Sampling required for influent and effluent.
4. Fecal Coliform and Total Residual Chlorine (TRC) monitoring shall be conducted during the period from April 1st through October 31st, when fecal coliform limitations are in effect. The monthly average shall be calculated as a geometric mean.

If chlorine is added to the wastewater flow at any time during the period from November 1st through March 31st, the effluent shall be sampled for TRC at the frequency required by the permit. The effluent limitation on TRC is in effect year-round.

The limitations on fecal coliform and TRC are state certification requirements

5. Total Residual Chlorine (TRC) shall be tested using **Amperometric Titration** or the **DPD Spectrophotometric** method. The EPA approved methods are found in Standard Methods for the Examination of Water and Wastewater, 20th Edition, 4500-CL E and method 4500-CL G or USEPA Manual of Methods of Analysis of Water and Wastes, Method 330.5. The limit at which compliance/non-compliance determinations will be based is the Minimum Level (ML) which is defined as 50 ug/l for TRC. This value may be reduced by permit modification as more sensitive methods are approved by EPA and the State. Any value below 50 ug/l shall be reported as zero.
6. The LC50 is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.
7. The permittee shall conduct chronic toxicity tests six times per year. The permittee shall test the invertebrate, Ceriodaphnia dubia only, as it has been determined to be the more sensitive test species compared to the fathead minnow, Pimephales promelas. Four toxicity test samples shall be collected and tests completed during the quarters ending March 31, June 30, September 30 and December 31. Results for these tests are to be submitted by the 15th day of the month following the end of the quarter. An additional two samples shall be collected and tests completed during days when treatment plant total daily flow exceeds 30 mgd. These two test may be conducted during any month of the year. The results for these tests are also be submitted by the 15th day of the month following the end of the quarter in which they are taken. See Permit Attachment A, Toxicity Test Procedure and Protocol.

8. The C-NOEC is the chronic no observed effect concentration. This limit is a percentage which is calculated as the inverse of the average flow dilution factor of 1.02.
9. After one full year of toxicity testing during which all tests are acceptable, the permittee may request a reduction in the frequency of testing. A determination on any such reduction will be made by the EPA and DEP after considering the test results. Reductions in toxicity testing frequency will be effective upon receipt of a certified letter from EPA authorizing the reduction.

I.A.2. All POTWs must provide adequate notice to the Director of the following::

- a. Any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and
- b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- c. For purposes of this paragraph, adequate notice shall include information on:
 - (1) the quantity and quality of effluent introduced into the POTW; and
 - (2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

B. LIMITATIONS ON INDUSTRIAL USERS

Pollutants introduced into POTWs by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

C. INDUSTRIAL PRETREATMENT PROGRAM:

1. The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR 403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):
 - a. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with the pretreatment standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP, but in no case less than once per year and maintain adequate records.

- b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.
 - c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement; and
 - d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
2. The permittee shall provide the EPA and the Massachusetts Department of Environmental Protection (MADEP) with an annual report briefly describing the permittee's pretreatment program activities over the previous calendar year in accordance with 403.12(i) and in the report format described in the attached document(ATTACHMENT B). Annual reports shall be submitted no later than March 1 of each year.
 3. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR 403.18(c).
 4. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR 405 et. seq.

D. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from outfall listed in Part I A.1. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

E. OPERATION AND MAINTENANCE OF THE TREATMENT PLANT AND SEWER SYSTEM

Operation and maintenance of the treatment plant and sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Infiltration/Inflow

Within one year of the effective date of the permit, the permittee shall submit an I/I program to EPA and MADEP which describes the permittee's plan and schedule for eliminating excessive I/I to the collection system. The program shall include a list of major sewer connections made to the collection system over the previous 5 years and planned for next 5 years, an estimate of the flow contributed to the POTW by these connections, and a summary of any engineering or environmental analyses done to support the connections.

The permittee shall also submit an annual summary report of all actions taken to minimize infiltration /inflow in the permittee's sewer system as well as the sewer systems of the communities connected to the treatment works. This report shall be submitted to EPA and MADEP by February 19th of each year, summarizing activities during the previous calendar year. If there were any unauthorized discharges from the collection system during the previous calendar year which were caused by inadequate sewer system capacity, the permittee shall include in this report an evaluation of actions necessary to restore adequate capacity

3. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternate power source with which to sufficiently operate its treatment works (as defined at 40 CFR Section 122.2).

4. Chlorination System Report

Within 3 months of the effective date of the permit, the permittee will submit a report documenting the effectiveness of the chlorination and dechlorination systems. The report will specifically address how flow variability and chlorine demand variability affect compliance with the TRC and fecal coliform limits at all times. Sampling data shall be provided to support conclusions on how hourly and daily flow and chlorine demand variability affects permit compliance. The report will include a description of the chlorination and dechlorination systems and the methods for dosage control. The report will identify all changes necessary to ensure compliance with the TRC and fecal coliform limits at all times, including equipment modifications and upgrades, operational procedures (including calibration procedures and alarm/response procedures), and sampling protocols. The report will include a schedule for implementing all of the necessary changes. An annual report shall be submitted on November 30 of each year summarizing all exceedances of the TRC and fecal coliform effluent limits during the previous year, the estimated or measured fecal coliform and chlorine discharge levels during the exceedance, and measures taken to fix the problem and to prevent future occurrences.

F. SLUDGE

The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the Clean Water Act (CWA) Section 405(d) technical standards.

If an applicable management practice or numerical limitation for pollutants in sewage sludge more stringent than existing federal and state regulations is promulgated under Section 405(d) of the CWA, this permit shall be modified or revoked and reissued to conform to the promulgated regulations.

The permittee shall give prior notice to the Director and MADEP of any change(s) planned in the permittee's sludge use or disposal practice.

A change in the permittee's sludge use or disposal practice is a cause for modification of the permit. It is a cause for revocation and reissuance of the permit if the permittee requests or agrees.

1. General Requirements

- a. No person shall fire sewage sludge in an sewage sludge incinerator except in compliance with the requirements of 40 CFR part 503 subpart E.

2. Pollutant Limitations

- a. Firing of sewage sludge shall not violate the requirements in the National Emission Standard for Beryllium in 40 CFR part 61, subpart C. 10 grams per 24-hour period.
- b. Firing of sewage sludge shall not violate the requirements in the National Emission Standard for Mercury in 40 CFR part 61, subpart E, 3200 grams per 24-hour period.
- c. The daily concentration of the metals in sewage sludge fed to the incinerators shall not exceed the limit specified below (dry weight basis):

Max. Daily

Arsenic	489	mg/kg
Cadmium	103	mg/kg
Chromium	14397	mg/kg
Lead	2751	mg/kg
Nickel	686629	mg/kg

3. Operational Standards

- a. The monthly average concentration for Total Hydrocarbons (THC), corrected to zero

percent moisture and to seven percent oxygen, in the exit gas from the sewage sludge incinerator stack shall not exceed 100 PPM on a volumetric basis.

- b. The measured THC concentration shall be corrected to zero percent moisture using the correction factor below:

$$\text{Correction factor} = \frac{1}{(\text{percent moisture}) (1 - X)}$$

Where:

X = decimal fraction of the percent moisture in the sewage sludge incinerator exit gas in hundredths.

- c. The measured THC concentration shall be corrected to seven percent oxygen using the correction factor below:

$$\text{Correction factor} = \frac{14}{(\text{oxygen}) (21 - Y)}$$

Where:

Y = percent oxygen concentration in the sewage sludge incinerator stack exit gas (dry volume/dry volume)

- d. The measured THC value shall be multiplied by the correction factors in items b and c. The corrected THC value shall be used to determine compliance with Paragraph B.3.a.

4. Management Practices

- a. An instrument that continuously measures and records the THC concentration in the sewage sludge incineration stack exit gas shall be installed, operated and maintained for each incinerator in accordance with the manufacturer's written instructions.
- b. The THC instrument shall employ a flame ionization detector; have a heated sampling line maintained at a temperature of 150 degrees Celsius or higher at all times and shall be calibrated at least once every 24 hour operation period using propane.
- c. An instrument that continuously measures and records the oxygen concentration in the sewage sludge incinerator stack exit gas shall be installed, operated and maintained for each incinerator in accordance with the manufacturer's written instructions.
- d. The THC monitor and the oxygen monitor must meet the performance specifications detailed in "Continuous Emissions Monitoring Guidance for Part 503 Sewage Sludge

Regulations EPA Region 1."

- e. Upon completion of the testing to demonstrate compliance with the performance specifications, but not later than 90 days from the effective date of this permit, the operator of the incinerator(s) shall submit a certification stating that the continuous emissions monitoring system meets the performance specifications detailed in the above referenced guidance.
- f. An instrument that measures and records information used to determine the moisture content in the sewage sludge incinerator stack exit gas continuously, shall be installed, calibrated, operated and maintained for each sewage sludge incinerator in accordance with manufacturer's written instructions.
- g. An instrument which measures and records combustion temperatures continuously shall be installed, calibrated, operated and maintained for the sewage sludge incinerator in accordance with manufacturer's written instructions.
- h. The maximum combustion temperature of the sewage sludge incinerator shall not exceed 1750 ° F.
- i. The air pollution control devices shall be operated in the following manner:
 - (1). The pressure differential across the scrubber shall be within the range of 20 to 38 inches of water column.
- j. Sewage sludge shall not be fired in a sewage sludge incinerator if it is likely to adversely affect a threatened or endangered species listed under section 4 of the Endangered Species Act or its designated critical habitat.
- k. The permittee shall notify the EPA, within 7 days, if any continuous emission monitoring equipment is shut down or broken down for more than 72 hours while the incinerator continues to operate.
- l. Notification shall include the following:
 - 1. The reason for the shut down or break down;
 - 2. Steps taken to restore the system;
 - 3. The expected length of the down time; and
 - 4. The expected length of the incinerator operation during the down time of the monitoring system.
- m. Break downs or shut downs of less than 72 hours shall be recorded in the operations log along with an explanation of the event.

- n. Copies of all manufacturer's instructions shall be kept on file and be available during inspections.

5. Monitoring Frequency

- a. Beryllium and mercury shall be monitored at the following frequency: 2 times per year, during the months of January and July.
- b. Either stack testing or sludge testing may be used for demonstration of compliance with the beryllium and mercury requirements in Paragraphs 2.a. and 2.b.
- c. The pollutants in Paragraph 2.c. shall be monitored at the following frequency: 6 times per year, during the months of January, March, May, July, September and November.
- d. The operating parameters for the air pollution control devices shall be monitored at the following frequency: 1/day.
- e. The THC concentration in the exit gas, the oxygen concentration in the exit gas, information from the instrument used to determine moisture content, and combustion temperatures shall be monitored continuously.

6. Sampling and Analysis

- a. The sewage sludge shall be sampled at a location which is prior to charging to the incinerator and provides a representative sample of the sewage sludge being used or disposed.
- b. The metals in the sewage sludge shall be analyzed using "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, Second Edition (1982) with Updates I (April 1984) and II (April 1985) and Third Edition (November 1986) with Revision I (December 1987).
- c. If emission testing is done for demonstration of NESHAPS, testing shall be in accordance with Method 101A in 40 CFR Part 60, Appendix B, "Determination of Particulate and Gaseous Mercury Emissions from Sewage Sludge Incinerators."
- d. When sludge sampling is used for demonstration of compliance with NESHAPS, the following equation shall be used:

$$E = \frac{(M) \times (Q) \times (PS)}{1000}$$

Where:

E = Emission rate in grams/day
M = Pollutant concentration in sewage sludge in $\mu\text{g}/\text{gram}$
Q = Sludge feed rate to incinerator
PS = Percent solids

When determining emissions for beryllium, multiply the above equation by $(1 - \text{CE})$. (CE is the control efficiency for beryllium)

7. Record keeping

The permittee shall develop and retain the following information for five years:

- a. The concentration of pollutants in Paragraph 2.c. Report the maximum value of each pollutant.
- b. The THC concentration in the exit gas from each sewage sludge incinerator stack. Report the average monthly concentration as defined in Paragraph 3.a.
- c. The information that demonstrates that the requirements in the National Emission Standard for beryllium are met. The results of either the emission testing or sludge sampling shall be reported. If sludge sampling is reported, include calculation in Paragraph 6.d. for compliance demonstration.
- d. The information that demonstrates that the requirements in the National Emissions Standard for mercury are met. The results of either the emission testing or sludge sampling shall be reported. If sludge sampling is reported, include calculation in Paragraph 6.d. for compliance demonstration.
- e. The combustion temperatures, including the maximum combustion temperature for each sewage sludge incinerator. Report the average temperature range within the combustion zone and the maximum combustion temperature described in Paragraph 4.h.
- f. The values for the air pollution control device(s) operating parameters. Report the monthly average operating range.
- g. The oxygen concentration and information used to measure moisture content in the exit gas from the sewage sludge incinerator. Report the oxygen concentration and percent moisture results which were used to determine the THC values reported in Paragraph 7.b.
- h. The sewage sludge feed rate to the incinerator. Record the average daily and average monthly feed rate.
- i. The stack height of the sewage sludge incinerator.

- j. The dispersion factor for the site where the sewage sludge incinerator is located.
- k. The control efficiency for lead, arsenic, cadmium, chromium and nickel for each incinerator.
- l. The risk specific concentration for chromium, if a site specific risk specific concentration is determined.
- m. A calibration and maintenance log for the instruments used to measure the THC concentration and oxygen concentration in the exit gas from the sewage sludge incinerator stack, the information needed to determine moisture content in the exit gas, and the combustion temperatures.

8. Reporting

The information in Paragraph 7, a. through g., shall be reported annually on February 19. All reports shall be submitted to EPA and MADEP.

G. MONITORING AND REPORTING

1. Reporting

Monitoring results obtained during the previous month shall be summarized for each month and reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the effective date of the permit.

Signed original Discharge Monitoring Reports and all other reports required herein shall be submitted to the Director at the following address:

U. S. Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

Signed copies of all the Discharge Monitoring Reports and all other report herein, except Toxicity Test Reports, shall be submitted to the state at the following address:

Massachusetts Department of Environmental Protection
Bureau of Resource Protection
Southeastern Regional Office
20 Riverside Drive
Lakeview, Massachusetts 02347

Copies of all toxicity test reports and DMRs shall also be submitted to:

Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, Massachusetts 01608

H. STATE PERMIT CONDITIONS

This discharge permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the Massachusetts Department of Environmental Protection pursuant to M.G.L. Chap. 21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as an NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.